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S/180/60/000/01/016/027

E193/E135

Investigation of the Mechanics of Hydrogen Embrittlement of
Titanium and its Alloys

electrolytically introduced hydrogen. When hydrogen is introduced by the high-temperature diffusion treatment and the alloy is subsequently heated to the quenching temperature, re-distribution of hydrogen (i.e. its diffusion into the β -phase) takes place, until the partial pressure of hydrogen in both phases becomes equal. In the case under consideration, the re-distribution of hydrogen between the two phases is caused by the fact that at a given temperature, the equilibrium partial pressure of hydrogen, dissolved in the α -phase, is higher than that of hydrogen dissolved in the β -phase. This is illustrated by the diagram, reproduced in Fig 9, where the equilibrium partial pressure (P, mm Hg) is plotted against temperature ($^{\circ}\text{C}$) for an alloy containing 2 at-% H_2 . The non-uniform distribution of hydrogen in a two-phase alloy can be arrested by quenching. However, for a given hydrogen content in the specimen, its concentration in the β -phase will not be constant (as in the case of specimens with electrolytically introduced hydrogen), but ✓

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will increase with decreasing proportion of the β -phase in the alloy. In addition, owing to solubility of hydrogen in the α -phase decreasing with falling temperature, the formation of hydrides may occur in this phase. Since solubility of hydrogen in titanium can be increased by alloying, the alloy used in the next series of experiments, in addition to 3% Mo and 3% V (elements stabilizing the β -phase), contained 5% aluminium which considerably increases solubility of hydrogen in the α -phase. The results are given in Table 11, showing: H_2 content, wt-%; δ , and ψ for specimens tested at the rate of strain of (I) 2 mm/min and (II) 200 mm/min. It will be seen that the presence of aluminium considerably decreased the proneness of the alloy to hydrogen embrittlement. The results of mechanical tests, conducted on specimens of the same alloy containing electrolytically introduced hydrogen, are given in Table 12, showing: condition of the specimen (treated electrolytically at $I = 0.2$ amp/cm² for 1.5 h, top line, and at $I = 0.25$ amp/cm² for 3.0 h, bottom line); ψ of ✓

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specimens tested at the rate of strain of 2 mm/min (I) and 250 mm/min (II). In this case, the beneficial effect of aluminium was also apparent. Analysis of the results of the present investigation, correlated with the findings of other workers, led the present authors to several conclusions. (1) The sensitivity of single-phase titanium to hydrogen embrittlement is determined by two factors: (a) room temperature solubility of hydrogen in the given phase which determines the "safe" and "dangerous" range of hydrogen concentration; (b) ease with which the cracks, caused by the presence of hydrides, are propagated throughout the alloy; this characteristic depends on the magnitude of the work of deformation done in propagating the cracks in titanium. The "safe" hydrogen concentration in the β -phase is one thousand times higher than that in the α -phase. On the other hand, cracks are propagated more easily in the β -phase, the α -phase being less notch-sensitive and showing no tendency to cold shortness. It is precisely owing to the

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ease of propagation of cracks in the β -phase that the fully brittle condition was observed in the β -alloy immediately after the appearance of the first hydride precipitates (see Fig 5), whereas in the case of specimens with the hydrogen content below the saturation point, increasing the hydrogen content had practically no effect on the mechanical properties of the alloy.

(2) The hypothesis that hydrogen embrittlement of the two-phase titanium alloys can be attributed to the effect of hydrogen on each of the phases separately, has not been confirmed by the results of the present investigation. It is more likely that in the case of two-phase alloys, it is the interphase boundaries (absent in single-phase alloys) which constitute the geometrical locus of hydrogen embrittlement. Since hydrogen embrittlement in titanium alloys is directly associated with the presence of hydrides, and since microscopic examination of alloys, whose ductility depends on the rate of deformation, has revealed no hydrides, it has to be assumed that hydrides are precipitated in these alloys at ✓

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the interphase boundaries in the course of deformation of the specimens as a result of strain ageing. This hypothesis is in agreement with the results of Williams (Ref 17) who has found hydrides in several two-phase alloys tested to fracture, although no hydrides could be observed in these alloys before deformation.

There are 9 figures, 12 tables and 19 references, of which 10 are Soviet and 9 English. *W*

SUBMITTED: March 13, 1959

S/137/61/000/012/126/149
A006/A101

AUTHOR: Moroz, L.S.

TITLE: The effect of small amounts of admixtures on mechanical properties of metals

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 35, abstract 12Zh258 ("Tr. In-ta fiz. metallov. AN SSSR", 1960, no. 23, 49-85)

TEXT: Experimental studies are reviewed. The author discusses the effect of small amounts of admixtures on plastic deformation resistance of metals; on ultimate ductility and strength in failure of pure metals, and on the mechanical properties of metals at high temperatures. There are 102 references.

M. Matveyeva

[Abstracter's note: Complete translation]

Card 1/1

18.7500

AUTHORS: Moroz, L.S., Khesin, Yu.D.

68986
S/020/60/151/02/025/071
B013/B011

TITLE: Anomalous Growth of Metal Grains in Vacuo

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 2, pp 306-307 (USSR)

ABSTRACT: The authors made a special investigation of the influence exerted by the annealing of various metals in vacuo on the growth of their grains. This was done for the following reasons: In the investigation of the particular behavior of metals at high temperatures in vacuo they found a new phenomenon, namely, a faster growth of the grains than during annealing in normal air. In annealing deformed titanium in vacuo ($1 \cdot 10^{-4}$ torr) at temperatures above 800° this grain growth becomes clearly noticeable. The following materials were used for these investigations: technically pure titanium, Armco iron, M1-type copper. A fine-grained structure of these materials was obtained by deformation and annealing (grain size after annealing: 30 to 50μ). The annealed samples of all metals were mechanically treated and afterwards cut into two halves. One half of each sample was treated in vacuo, the other half in air in usual furnaces. Figure 2 shows microphotographs of the samples after annealing in vacuo and air (for iron, copper, and titanium). The grain size of all metals investigated was considerably larger after annealing in vacuo than after annealing in air. The higher the temperature of annealing the

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more distinct is this difference. Figure 4 shows the photographs of titanium macrostructure which were taken from sections of the samples. The sample annealed in vacuo had a coarse structure all over the cross section, the sample annealed in air was fine-grained. Armco iron samples gave analogous results. In the following one of the possible explanations of the anomalous growth of metal grains in vacuo is given: Various impurities having a higher vapor pressure than the metallic solvent are removed intensely during vacuum annealing. Experiments made by J.C. Chaston (Ref 2) concerning the growth of silver grains are considered to be very interesting in this respect. In heating deformed technically pure silver in air the grain grows only in the center of the sample, whereas in the outer layers (where oxygen could diffuse into silver) a very fine grain could develop. For a precise determination of the influence exerted by the impurities removed from the metal on the growth of the grain, titanium^a and Armco iron^b samples were annealed at 1200° in vacuo for five hours, subjected to cold deformation (50%) afterwards, and then annealed at 650°. After mechanical surface treatment these samples were cut into two pieces one of which was annealed in vacuo, the other in air. Temperature and duration of the second annealing process in vacuo were considerably less than the

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first time. In this case the grain size of the samples annealed in vacuo and in air did not show any difference. Finally, an argument for the decisive influence of impurities on the growth of grains is given. There are 4 figures and 8 references, 1 of which is Soviet.

PRESENTED: October 20, 1959, by G.V. Kurdyumov, Academician

SUBMITTED: October 15, 1959

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S/129/62/000/004/001/010
E111/E135

AUTHORS: Moroz, L.S., Doctor of Technical Sciences, Professor,
and Mingin, T.E., Engineer

TITLE: Hydrogen brittleness of steel

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,
no.4, 1962, 2-6

TEXT: Hydrogen embrittlement is generally considered to result from high local concentrations in micro-volumes where initial cracks are formed; its intensification by relatively slow plastic and elastic deformation is attributed to the acceleration of hydrogen diffusion it produces. Its disappearance at high deformation rates is attributed to the inability of diffusion to keep pace. The authors have, however, found that with sufficiently hydrogenated high-strength steel the plasticity is not fully restored by increasing deformation rates. Their experiments with Cr-Ni-Mo steel indicate that there are two simultaneous mechanisms in hydrogen embrittlement. The first, which is independent of deformation speed, produces what is provisionally termed 'irreversible' brittleness, but can often

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Hydrogen brittleness of steel

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be eliminated by annealing. The second has an incubation period in which hydrogen diffusion occurs leading to local concentration sufficient to give brittleness; this type can be suppressed by deformation at rates giving deformation times less than the incubation period, and is provisionally called 'reversible'. The existence of these two mechanisms was confirmed by the difference between the change of ductility of hydrogen-saturated specimens with storage time for different deformation rates. Comparison with the behaviour of hydrogen content during storage indicates that the observed decrease in ductility (in dynamic extension) during storage is due to hydrogen redistribution, and explains various other features. Microscopic investigation showed that pores responsible for irreversible brittleness are most frequently located at grain boundaries. Their hydrogen is not fully eliminated by storage at room temperature. There is an initial rise in the dynamic ductility during storage; this is due to the fact that reversible brittleness with very high hydrogen concentrations is not fully suppressed under the particular deformation speeds used, but falls gradually.

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The responsibility of hydrogen in pores for irreversible brittleness was confirmed by similar experiments on technical-grade iron. The authors show that stress distribution associated with pores can lead to premature cracking, while the overall resistance to plastic deformation remains as found experimentally, practically unchanged. The embrittling action of hydrogen will be greater if the pores are crack-like in shape and hence reversible brittleness produced in slow deformation of steel (with low hydrogen contents) is more pronounced than is irreversible brittleness in dynamic extension. There are 5 figures and 1 table.

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188200

39764
S/126/62/013/006/011/018
E021/E192

AUTHORS: Moroz, L.S., Khesin, Yu.D., and Marinets, T.K.
TITLE: Study of creep and long-term strength of iron at low temperatures
PERIODICAL: Fizika metallov i metallovedeniye, v.13, no.6, 1962, 912-919

TEXT: The main investigations were carried out on Armco iron containing 0.1% C, 0.034% N, 0.18% O₂ and 0.06% Cu. The samples were tested after annealing at 930 °C. The deformation during creep was measured with an accuracy of 4×10^{-5} cm. The test temperatures were obtained using mixtures of dry ice in kerosene (-40 °C) and in benzene (-75 °C). With a stress of 34 kg/mm², creep occurred at -40 and -75 °C and on the steady-state part of the curve the rate was 10^{-2} to 10^{-3} %/hour. At room temperature there was no steady-state creep at this stress. It is proposed that the reason for the absence of creep effects at 18 °C is due to the influence of deformation ageing of iron. The energy of activation of the process of creep fracture for low temperatures and for a stress of 39 kg/mm² was found to be 13.5 kcal/mol.,
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Study of creep and long-term strength..S/126/62/013/006/011/018
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whereas the same energy of activation at 500 °C with a stress of 10 kg/mm² was 76 kcal/mol. Finally, the authors briefly consider the theory of the time-temperature relationships of the strength of metals in the light of their results. There are 7 figures and 2 tables.

SUBMITTED: October 16, 1961

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S/129/63/000/002/004/014
E193/E383

AUTHORS: Moroz, L.S., Khesin, Yu.D. and Belova, O.S.

TITLE: Structure and mechanical properties of low-alloy titanium alloys

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, no. 2, 1963, 17 - 23

TEXT: The object of the present investigation was to determine the cause of deterioration in strength and plasticity suffered by titanium alloys of a composition near to that of the α -phase when they are slowly cooled from the β range. The experimental materials included titanium iodide, technical-purity titanium and Ti - 4% Al alloys, containing 0.55 - 1.62% V, 0.64 - 1.36% Mo, 0.66 - 1.27% Mn or 0.71% Fe. The effect of the following treatments was studied: 1) annealing at 800 °C for 2 hours; 2) water-quenching from 1 250 °C; 3) furnace-cooling from 1 250 °C. The first series of tests comprised determination of the mechanical properties. Typical results for pure and alloyed titanium are given below.

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Structure and

Alloy	Heat treat- ment	σ_b	$\sigma_{0.2}$	δ	ψ	a_k
Titanium iodide	1	31.0	22.4	60.5	82.6	30.2
	2	33.0	23.7	44.6	80.9	25.1
	3	31.3	19.9	58.9	83.0	26.1
Ti - 4% Al- - 0.71% Fe	1	74.2	69.4	16.1	46.0	8.2
	2	81.6	73.9	16.4	43.4	9.5
	3	64.6	59.0	8.9	25.3	5.5

Key: σ_b = UTS, kg/mm²; $\sigma_{0.2}$ = 0.2% proof stress; δ = elongation,%;
 ψ = reduction in area, %; a_k = impact strength, kgm/cm².

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Structure and

To determine the cause of marked differences between the effect of slow cooling on the properties of pure and alloyed Ti, the micro-structure of specimens subjected to various heat-treatments was studied, the composition of the second phase found in slowly-cooled alloys was determined and its effect on the mode of plastic deformation was studied by microscopic examination of test pieces extended to various degrees of deformation and by following the changes taking place on the surface of preliminarily polished tensile test pieces during the actual tensile test. Conclusions:

- 1) decreasing the rate at which Ti alloys, containing small additions of the β -phase stabilizing elements, are cooled from the β range brings about a change in the structure of the alloy grains and a decrease in the mechanical properties.
- 2) The structural change consists of the appearance of plate-like precipitates of the second phase, formed above 800 °C, i.e. in the $\beta \rightarrow \alpha + \beta$ transformation range.
- 3) The presence of these precipitates leads to nonuniform deformation; as a result, microcracks are formed in the region of localized deformation in the early stages of plastic flow and this causes a decreases in strength and plasticity of the alloy.

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4) The harmful effect of the second-phase precipitates increases with increasing distance between them which, in turn, depends on the rate of cooling of the specimens from the β range. 5) The results of X-ray and spectrographic analysis show that the formation of plate-like precipitates is associated with redistribution of the β -phase stabilizing elements; the concentration of these elements in the precipitate is so high that the β -phase is retained in the precipitate at room temperature. The fact that formation of second-phase precipitates occurs only in slowly-cooled specimens indicates the diffusion character of the process. There are 6 figures and 7 tables.

Card 4/4

MOROZ, L.S.; KOLGATIN, N.N.; TEODOROVICH, V.P.; DERYABINA, V.I.

Effect of hydrogen on the mechanical properties of nickel and copper. Fiz. met. i metalloved. 16 no.5:737-742 N '63.

(MIRA 17:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut neftekhimicheskikh protsessov.

L 31845-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(b) MJW/JD

ACCESSION NR: AP5004588

S/0020/65/160/002/0311/0313

AUTHORS: Moroz, L. S.; Mingin, T. E.

TITLE: Investigation of the mechanism of hydrogen brittleness of steel

SOURCE: AN SSSR. Doklady, v. 160, no. 2, 1965, 311-313

TOPIC TAGS: steel fracture, hydrogen brittleness, hydrogen diffusion/5KhNM

ABSTRACT: Although the hydrogen brittleness of steel has been satisfactorily explained in the past, it is more difficult to explain the hydrogen brittleness of steel at low concentrations, less than 10 cc per 100 grams of metal. The authors discuss a hypothesis advanced to explain this phenomenon, namely that the hydrogen must become localized in microscopic regions in order to cause brittleness. Since this hypothesis implies that the limiting processes in hydrogen

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ACCESSION NR: AP5004588

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brittleness is the diffusion of the hydrogen in the steel, they propose to determine experimentally the activation energy of the process of retarded failure due to the hydrogen, and to compare the values obtained with the activation energy of the diffusion of hydrogen in steel. Two series of experiments were made, under different conditions, one in which failure was produced at the instant when the hydrogen entered the steel, and one when failure was produced after prolonged stay of hydrogen in the steel. The steel tested was 5KhNM in the form of plates measuring 3 x 10 x 80 mm. The heat treatments and the test procedures are described. Although the results did not yield a definite relation between the activation energy and the stress, the average activation energy obtained in the second type of experiment was approximately three times larger than that of the first type. This could be only due to the trapping of the hydrogen in microscopic regions and confirms the hypothesis stated above. This report was presented by B. P. Konstantinov. Orig. art. has: 2 figures and 1 table.

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I 31845-65

ACCESSION NR: AP5004588

ASSOCIATION: None

SUBMITTED: 03Jun64

ENCL: 00

SUB CODE: MM

NR REF SOV: 005

OTHER: 007

Card 3/3

MOROZ, M.

What is delaying payment of bills of interfering organiza-
tions. Sil'.bud. 13 no. 5.17-18 My 1964. (MIRA 17:3)

1. Nachalnik upravleniya kreditovaniya kolhozov Ukrainskoy res-
publikanskoy kontory gosbanka.

MOROZ, M.A.

Replacing charging hole bricks. Koks i khim. no.1:59 '60.
(MIRA 13:6)

1. Yasinovskiy koksokhimicheskiy zavod.
(Yasinovka--Coke ovens)

MOROZ, M.A., vrach-ordinator

Our experience in the higher training of medical nurses. Med.
sestra 19 no.8:43-44 Ag '60. (MIRA 13:7)

1. Iz khirurgicheskogo otdeleniya Rovenskoy oblastnoy bol'nitsy.
(NURSES AND NURSING--STUDY AND TEACHING)

MOROZ, M.A. (Rovno)

Documentation in referring patients to an infirmary. Vrach. delo
no.11:127 N '61. (MIRA 14:11)

1. Khirurgicheskoye otdeleniye oblastnoy bol'nitsy.
(MEDICAL STATISTICS)

MOROZ, M.A. (Rovno, ul. Dobrolyubova, d.16)

Connective drainage cannula. Klin.khir. no.9:89-90 S '62.

(MIRA 16:5)

1. Khirurgicheskoye otdeleniye (zav. - Ye. M. Borovyy) Rovenskoy
oblastnoy bol'nitsy.

(DRAINAGE, SURGICAL)

MORCZ, M.A.

Clamp-corrector for tubular drainage. Klin. kh'r. no.3:22 '65.
(MIRA 12:2)

1. Urologicheskoye otdeleniye (zav. - M.A.Moroz) Rovenskiy
oblastnoy bol'nitsy.

MOROZ, M.I.

Give greater support to the loose housing of cattle. Mekh. sil'.
hosp. 10 no.3:24-25 Mr '59. (MIRA 12:6)

1. Glavnyy spetsialist Gosudarstvennogo nauchno-tekhnicheskogo komiteta
pri Sovete Ministrov USSR.
(Dairy barns)

MOROZ
TOLMACHEV, Yu., inzh.-podpolkovnik; MOROZ, N., inzh.-podpolkovnik.

New apparatus for training radiotelegraph operators. Voen. sviaz.
16 no.1:11-15 Ja '58. (MIRA 11:2)
(Radio operators--Study and teaching)

MOROZ, Nikolay Andreyevich; TOIMACHEV, Yuriy Aleksandrovich; KON'KOV, V.I.,
otv. red.; SVERDLOVA, I.S., red.; SHEFER, G.I., tekhn. red.

[Repair of telegraph apparatus and automated attachments] Remont tele-
grafnykh apparatov i pristavok avtomatizatsii. Moskva, Gos. izd-vo
lit-ry po voprosam sviazi i radio, 1961. 239 p. (MIRA 14:11)
(Telegraph--Equipment and supplies)

MOROZ, N.A.

Treatment of acute cholecystitis. Zdrav. Belor. 6 no.8:45-46 Ag '60.
(MIRA 13:9)

1. Iz khirurgicheskogo otdeleniya Molodechnenskoy gorodskoy bol'nitsy.
(GALL BLADDER---DISEASES)

MOROZ, N.A.

Qualitative changes of forage bean seeds during ripening
and chemical drying. Bot.; Isrl. Bot. Soc. 7: 1-10
1965.

(MIRA 1:13)

MOROZ, N.F.

Drying matches in low vacuum. Nauch. trudy LTA no.97:133-139 '62.
(MIRA 17:2)

KOSEVICH, V.M.; MOROZ, N.G.; BASHMAKOV, V.I.

Effect of inclusions on the twinning of zinc crystals. Kristallo-
grafiia 5 no.3:426-431 My-Je '60. (MIRA 13:8)

1. Khar'kovskiy politekhnicheskii institut im. V.I.Lenina.
(Zinc crystals)

KOSEVICH, V.M.; SOLDATOV, V.P.; Prinsipali uchastiye: MOROZ, N.G.,
student; KRIVKO, A.P., student.

Experimental etching of zinc single crystals. Kristallografiia
6 no.3:439-442 My-Je '61. (MIRA 14:8)

1. Khar'kovskiy politekhnicheskii institut imeni V.I. Lenina.
(Zinc crystals)

BERCHICH, V. D., F. M. V. A. A., F. M. V. A. A., A. P., H. C.,
MCROZ, H. K., and S. M. L. V. B. H.

6

"Critical current for Nb-Zr films in a magnetic field."

report to be submitted for the 5th Intl. Conf. on Low Temperature Physics (IUTAP)
London, England, 16-22 Sep 62.

BORODICH, V.D.; GOLUB', A.P.; KOMBAROV, A.K.; KREMELEV, M.G.; MOROZ, N.K.;
SAMOYLOV, B.N.; FIL'KIN, V.Ya.

Critical currents of Nb-Zr alloys in an external magnetic
field. Zhur. eksp. i teor. fiz. 44 no.1:110-115 Ja '63.

(MIRA 10:5)

(Niobium-Zirconium alloys—Electric properties)

(Magnetic fields)

ACC NR:AP6030133

(N)

SOURCE CODE: UR/0120/66/000/004/0071/0078

AUTHORS: Zelenov, B. A.; Lebedeva, L. K.; Mantsa, Y.; Moroz, N. S.

ORG: Joint Institute for Nuclear Research, Dubna (Ob'yedinonnyy institut yadernykh issledovaniy)

TITLE: A multichannel high-speed device using semiconductors for physics experiments on the 10 Gev synchrophasotron

SOURCE: Pribery i tekhnika eksperimenta, no. 4, 1966, 71-78

TOPIC TAGS: physics research facility, semiconductor device, synchrophasotron, cable, oscillograph, diode, photomultiplier, particle scatter, transistor, synchrotron, particle detector, scintillation counter, gas filled counter, Cerenkov counter, / OIYaI synchrophasotron, FEU 36 photomultiplier, RK 19 cable, RK 2 cable, EMO 1 oscillograph, P418Ye diffusion transistor, D602A diode, LVE synchrophasotron

ABSTRACT: A multichannel high-speed device has been developed for use in conjunction with a 10 Gev OIYaI synchrophasotron to conduct physical experiments on large angle scattering of high energy particles. The multiplier included in the device provides flexibility enabling 17 counters to be operated and easily switched. This device coordinates the scintillation counters and gas-filled Cerenkov counters (which, with an FEU-36 photomultiplier, can record a single electron expelled from a photocathode) and gives a high-speed response in the nanosecond range for handling count rates of

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UDC: 539.1.075

ACC NR: AP6030133

10^6 per sec, while providing high stability in counting the low intensity count rates of scattered particles (up to 1 particle per hr). Six coincidence circuits and three anticoincidence circuits are combined to provide 100% recording effectiveness while eliminating instability and insuring the recording of the true events. The device uses P418Ye high frequency diffusion transistors, germanium tunnel diodes, D602A high frequency diodes, and RK-2 and RK-19 cables to give time integration of the circuit and pulse shaping. The system is synchronized by a control system which employs an EMO-1 oscillograph. It is unitized and held on two racks. A one-year test on the LVE synchrophasotron with 3.17 GeV/sec pi mesons showed that the secondary coincidence circuit and the monitor gave the same count over a wide threshold range. The resolution time of the coincidence circuits is < 10 nanosec, and the anticoincidence circuit provides a suppression effectiveness of 100% when used with a threshold counter. Orig. art. has: 10 figures.

SUB CODE: 09, 20/ SUBM DATE: 26May65/ ORIG REF: 002/ OTH REF: 004

Card 2/2

AL'BITSKAYA, M.A.; MOROZ, O.B.

Variety of the species and the quantity of seeds in the soil of artificial ash plantations in Dnepropetrovsk Province. Bot. zhur. 50 no.6:856-861 Je '65. (MIRA 18:7)

1. Dnepropetrovskiy gosudarstvennyy universitet, kompleksnaya ekspeditsiya po issledovaniyu lesov stepnoy zony UkrSSR.

TSATUROVA, G.A.; MOROZ, O.N.

Outbreak of aspergillosis at a brewery and alcohol plant. Vop.
pit. 20 no.3:55-59 My-Je '61. (MIRA 14:6)

1. Iz sanitarno-gigiyenicheskogo sektora (zav. G.A.TSaturova)
Nauchno-issledovatel'skogo instituta epidemiologii, mikrobiologii
i gigiyeny i iz kafedry morfologii i sistematiki vysshikh i nizshikh
rasteniy (zav. - dotsent G.D.Pashkov) universiteta, Rostov-on-Donu.
(ASPERGILLUS) (MALT)

MEMO, P.

The
automation process. 40 1,5 4 0

MOROZ, Piotr, mgr inz.

New automation trends in machine building. Przegl mech 23 no.
15:421-424 10 Ag '64

1. Committee of Science and Technology, Warsaw, and Secretary,
Central Commission of Automation and Measurements, Warsaw.

MONDZ, I. A.; KALITRACH, I. P., ANDERSON, M. J.

Experimental investigation of the quasi-stationary
 flows. Trans. Amer. Soc. Mech. Engrs. 1910, 32, 1-11.

1. Vseozhnyudnyy nauchno issledovatel'skiy i proyektirovaniy tsentr dlya
institutov nauki, obshchestvennykh i gosudarstvennykh uchrezhdeniy i razvitiya gosudarstvennoy

MOBOZ, T.A.

Methodical errors in the modeling of a chain connection petroleum
pipeline. Izv. vys. shkoly. Zav. naft' i gaz 8 no.6:92-95 '65.

(MIRA 18:7)

1. Moskovskiy institut tekhnicheskoy i gazovoy promyshlennosti im.
akademika I.M. Gubkina.

MURON, P.A., POLYANSKIY, I.V.

Nonstationary processes in a petroleum pipeline when the regime
of the operation of a pumping station changes. Neft, khim. 43
no.5:65-68 My '65. (MIRA 18:6)

SINEL'NIKOV, A.V.; PEVZNER, V.B.; ADAMOVICH, S.P.; MOROZ, P.A.

Basic problems in the automatic control of a pipeline operating
in a "pump to pump" regime. Neft. khoz. 43 no.6:46-51 Je '65.
(MIRA 18:7)

MOROZ, P.A. (Moskva); POLYANSKAYA, L.V. (Moskva)

Solution of some problems of unsteady fluid flow in a piping.
Inzh. zhur. 5 no.5:967-970 '65. (MIRA 18:10)

GLYBIN, Illarion Petrovich, kand. tekhn. nauk; MOROZ, P.D.,
retsenzent

[Automatic densimeters] Avtomaticheskie plotnomery. Kiev,
Tekhnika, 1965. 257 p. (MIRA 18:11)

VOL'FSON, N.I.; MOROZ, P.E.; YEFIMOVA, A.M.; GUSEVA, T.F.

Evaluation by various methods of intravital microscopy of the
depth of the lesion from Ehrlich tumor cells in vitro. Eksp. i
klin. issl. po antibiot. 1:318-324 '58. (MIRA 15:5)
(CANCER) (MICROSCOPY)

11/2/58, 11/2
MOROZ, P.H.

~~Device for the microscopy of living organs using ordinary objectives [with summary in English]. Zhur.ob.biol. 19 no.1:82-85 Ja-F '58. (MIRA 11:1)~~

1. Laboratoriya eksperimental'noy onkologii Instituta onkologii
AMN SSSR.
(MICROSCOPY--TECHNIQUE)

MOROZ, P. E., Cand Med Sci (diss) -- "Investigation of certain experimental tumors by the methods of fluorescent and ultraviolet microscopy". Leningrad, 1959. 14 pp (Central Sci Res Inst of Rad Radiology of the Min Health USSR), 350 copies (KL, No 9, 1960, 123)

BRUMBERG, Ye.M.; BARSKIY, I.Ya.; MOROZ, P.E.

Ultraviolet microscopy of biological objects with incident
illumination. Biofizika 4 no.5:595-599 '59. (MIRA 14:6)
(MICROSCOPY) (ULTRAVIOLET RAYS)

MOROZ, P.E. (Leningrad, ul. Yablochkova, d.3, kv.18)

Ultraviolet and ultraviolet fluorescence microscopy in the investigation of mouse pulmonary adenomas. Vop.onk. 5 no.3:338-341 '59.

(MIRA 12:12)

1. Iz laboratorii eksperimental'noy onkologii (zav. - chlen-korrespondent AMN SSSR prof. L.M. Shabad) Instituta onkologii AMN SSSR (dir. - deystvitel'nyy chlen AMN SSSR prof. A.I. Serebrov).

(LUNG NEOPLASMS, exper.

ultraviolet & ultraviolet fluorescence microscopy
of mouse pulm. adenoma (Bus))

(NEOPLASMS, exper.

same)

MOROZ, P.E.

In vivo fluorescence microscopy of the mouse lung. Zhur.ob.biol.
20 no.6:469-476 N-D '59. (MIRA 13:4)

1. Institute of Oncology, Academy of Medical Sciences of the
U.S.S.R., Leningrad.
(FLUORESCENCE MICROSCOPY) (LUNGS)

MOROZ, P. E.

Morphogenesis and morphology of pulmonary adenomas in mice
according to data from intravital fluorescence microscopy.
Vop. onk. 8 no.1:56-63 '62. (MIRA 15:2)

1. Iz laboratorii eksperimental'noy onkologii (konsul'tant -
chl.-korr. AMN SSSR prof. L. M. Shabad) Instituta onkologii
AMN SSSR (dir. - deystv. chl. AMN SSSR prof. A. I. Serebrov)

(LUNGS—TUMORS) (FLUORESCENCE MICROSCOPE)

MOROZ, P.E.

Obtaining clones of Ehrlich's ascitic carcinoma in vivo. Biul .
eksp. biol. i med. 54 no.12:79-81 D'62. (MIRA 16:6)

1.Iz Instituta tsitologii AN SSSR, Leningrad. Predstavlena
deystvitel'nym chlenom AMN SSSR L.M.Shabadom).
(CANCER)

MORCZ, P.E.

Use of light tubes for electrophoresis of the cell walls of
microelectrodes. TSitoria et al. 1976. 1976. 1976. 1976.

1. Laboratoriya kosmicheskoy biologii Instituta biokh. i
SSSR, Leningrad.

...MINI-... (NENKAY, D.K.; M.B., P.S.)

...method... study... (NIRA 12:8)

...laboratory... USSR, Leningrad.

MORSE, P.L.

Attachment to the letter for the microscopy of frozen objects.
TSitologiya 6 no.6:778-780 N-D, '64. (VINA 18:8)

1. Laboratoriya kosmicheskoy biologii Instituta tsitologii AN SSSR,
Leningrad.

MOROZ, P.E.

Movement of the microinstruments by means of the condenser stand during micromanipulation under the microscope. TSitolopika 5 no.3:354-355 My-Je '63. (MIRA 17:6)

1. Laboratoriya kosmicheskoy biologii Instituta tsitologii SSSR, Leningrad.

SHCHERBAKOVSKIY, D.Z.; LIN'KO, I.V.; MOROZ, P.F.

Introducing a machine for cutting, bending, and rolling out
tubes. Biul. tekhn.-ekon. inform. Gos. nauch.-issl. inst.
nauch. i tekhn. inform. 18 no. 12.28-29 S. 165 (M. 23. 1977)

MOROZ, P.G.; YUSHKO, M.M.

Foamed concrete roof slabs for industrial buildings. Transp.
stroi. 12 no.5:52 My '62. (MIRA 15:6)

1. Glavnyy tekhnolog tresta Dneprotransstroy (for Moroz).
2. Nachal'nik tsentral'noy laboratorii trest Dneprotransstroy
(for Yushko).
(Lightweight concrete) (Roofing, Concrete)

MOROZ, P.I.

New apparatus for veterinary work. Veterinariia 41 no.3:104-108
Mr '65. (MIRA 18:1)

1. Nachal'nik spetsial'nogo konstruktorskogo byuro veterinarnogo
priborostroyeniya Soyuznogo tresta po snabzheniyu sel'skogo
khozyaystva veterinarnymi tekhnicheskimi sredstvami, instru-
mentariyem i materialami.

L 43887-65 EWA(b)-2/EWA(1)/EWT(1) Pa-4 JK

ACCESSION NR: AP5010906

UR/0286/65/000/007/0095/0095

AUTHORS: Kal'nov, L. A.; Chernetskiy, Yu. P.; Moroz, P. E.; Nikol'skiy, B. A.

TITLE: Aerosol apparatus for aerogenic immunization of livestock. Class 30, No. 169759

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 95

TOPIC TAGS: immunization, aerosol, livestock

ABSTRACT: This Author Certificate presents an aerosol apparatus for aerogenic immunization of livestock. The apparatus includes an aerosol chamber and a compressor with atomizing nozzles (see Fig. 1 on the Enclosure). To increase the efficiency of livestock immunization and for economical utilization of biological preparations, the aerosol chamber forms a compartmented feed box and is provided with apparatus for a simultaneous airtight closing of the openings and for holding the heads of the livestock. The upper part of this apparatus contains sliding curtains with chains for grasping the heads of the livestock. Orig. art. has: 1 figure.

Card 1/3

L 43887-65

ACCESSION NR: AP5010906

ASSOCIATION: Spetsial'noye konstruktorskoye byuro sooveterinarnogo
priborostroyeniya MSKh SSSR (Special Construction Bureau of the Zoo-Veterinary
Equipment Construction, MSKh SSSR)

SUBMITTED: 09Sep63

ENCL: 01

SUB CODE: LS

NO REF SOV: 000

OTHER: 000

Card 2/3

L 43887-65

ACCESSION NR. AP5010906

ENCLOSURE: 01

0

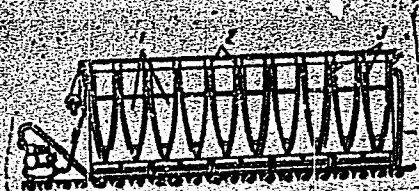


Fig. 1. 1- compartmented feed box;
2- chains; 3- curtains

Card 3/3 CC

MOROZ, P.K., inzh.; KERMAN, Z. Ie., inzh.

Experimental application of the industrial method of repairing
building machines. Mekh. stroi. 20 no.8:19-22 Ag '63.
(MIRA 16:11)

LEVCHENKO, A.I., kand. tekhn. nauk; MOROZ, R.A.

Synthesis of 3-vinyl ether of acenaphthene. Khim. prom.
[Ukr.] no.2:34-36 Ap-Ie '63. (MIRA 16:8)

1. Ukrainskiy zaochnyy politekhnicheskyy institut.

OSPOVAT, R.M.; MOROZ, R.I.

Botkin's disease in pregnant women. Sov.med. 21 Supplement:24 '57.
(MIRA 11:2)

1. Iz akushersko-ginekologicheskoy kliniki i kliniki propedevtiki
vnutrennikh bolezney Khabarovskogo meditsinskogo instituta.

(HEPATITIS, INFECTIOUS)

(PREGNANCY, COMPLICATIONS OF)

MOROZ, R.I., kand.med. nauk, GORLOV, A.P. (Khabarovsk)

Systemic periostosis ossificans (Pierre-Marie-Bamberger disease)
Klin.med. 36 no.4:121-125 Ap'58 (MIRA 11:5)

1. Iz kafedry gosptal'noy terapevticheskoy kliniki (zav. - prof.
B.A. Temper) Khabarovskogo meditsinskogo instituta (dir. - dotsent
S.K. Nechepayev)
(OSTEOARTHRIT, HYPERTROPHIC PULMONARY, manifest.
clin. & x-ray manifest. (Rus))

TEMPER, B.A., prof.; MOROZ, R.I., kand.med.nauk; CHERNYSHEVA, A.V. (Khabarovsk)

Course of Botkin's disease in pregnancy [with summary in English].
Klin.med. 37 no.2:67-71 F '59. (MIRA 12:3)

1. Iz kafedry gosspital'noy terapii (zav. - prof. B.A. Temper) Khabarovskogo meditsinskogo instituta (dir. - dots. S.K. Nechepayeva).

(HEPATITIS, INFECTIOUS, in pregn.
case reports (Rus))

(PREGNANCY, compl.
infect. hepatitis (Rus))

TEMPER, B.A.; VASILEVSKAYA, N.P.; MOROZ, R.I.; SMYSHLYAYEVA, A.P.

Characteristics of the arterial pressure in young people in the
city of Khabarovsk; report No. 1. Trudy Khab.med.inst. no.20:162-
170 '60. (MIRA 15:10)

1. Iz kafedry gosital'noy terapii (zav. prof. B.A.Temper)
Khabarovskogo meditsinskogo instituta.
(Khabarovsk--BLOOD PRESSURE)

SYABRYAY, V.T.; MOROZ, S.A.

Sixth All-Union Conference on the Current State of the Study of
Geology in the U.S.S.R. Geol.zhur. 21 no.5:114-115 '61.

(MIRA 14:10)

1. Institut geologicheskikh nauk AN USSR.
(Geology)

"APPROVED FOR RELEASE: 07/12/2001

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APPROVED FOR RELEASE: 07/12/2001

CIA-RDP86-00513R001135210010-7"

MOROZ, S.I., inzh. (Donetsk); TASHKEVICH, Yu.A., teknik (Donetsk)

Development of the control system of corridor-type clarifiers.
Vod. i san. tekhn. no.8:35 Ag '65.

(MIRA 18:1)

MOROZ, S.M.

[Public inspection of the production quality of Leningrad industrial cooperatives] Obshchestvennyi smotr kachestva produktsii promyslovoi kooperatsii Leningrada. Leningrad, Koiz, 1949. 100 p. (MLBA 6:7)
(Leningrad--Efficiency, Industrial) (Efficiency, Industrial--Leningrad)

MOROZ, S.M., BESSARABOV, V.I.

Processing sugar beets harvested by the continuous method. Sakh.
prom. 34 no.7:23-25 J1 '60. (MIRA 13:7)

1. Makovskiy sakharanny zavod (for Moroz).
2. Vsesoyuznyy nauchno-issledovatel'skiy institut mekhanizatsii
sel'skogo khozyaystva (for Bessarabov).
(Sugar beets)

MOROZ, S.S., podpolkovnik

Reconnaissance and minor repair work on low-water bridges.
Artill.zhur. no.8:17-23 Ag '53. (MIRA 13:3)
(Military bridges)

MOROZ, I.N.

Intravenous administration of oxytocin for the induction and stimulation of labor. Akush. i gin. 40 no.5841-46 3-0 '64. (MIRA 18:5)

1. I-ye akusherakoye otbol'tse 'rukovodite.' - doktor med. nauk, R.I. Alganova; Nauchno-issledovatel'skogo instituta akusherst. i ginekologii 'Sir. - prof. G.V. Makoyeva; Ministerstva zdravookhraneniya SSSR, Moskva.

KALGANOVA, R.I., doktor med. nauk; MOROZ, T.N.

Comparative evaluation of various methods for stimulating labor.
Sov. med, 27 no.1:71-76 Ja '64. (MIRA 17:12)

1. Nauchno-issledovatel'skiy institut akusherstva i ginekologii
(direktor - prof. O.V. Makeyeva) Ministerstva zdravookhraneniya
SSSR, Moskva.

MOROZ, T.S., klinicheskiy ordinator

Treatment of croupous and focal pneumonia with bitsillin. Zdrav.
Belor. 6 no.9:52-55 S '60. (MIRA 13:9)

1. Iz kafedry propedevtiki vnutrennikh bolezney (nauchnyy rukovoditel'
- professor I.D. Mishenin) Minskogo meditsinskogo instituta.
(PNEUMONIA) (PENICILLIN)

CHUDNOVSKIY, A. R., inzh.; VAYSER, L. V., inzh.; GRABOY, L. P., inzh.;
MOROZ, V. A., inzh.

Using plastics in electroplating. Mashinostroenie no.5:71-72
S-0 '62. (MIRA 16:1)

1. Odesskiy zavod khelodil'nogo mashinostroyeniya.

(Electroplating) (Plastics)

KORCO, V. A., Aspirant

"Typical Block Arrangement of Remote Control of Communal Economy Items."
Cand Tech Sci, Academy of Communal Economy imeni K. D. Pavlov, 6 Dec 54.

Survey of Scientific and Technical Dissertations Defended at USSR Higher
Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

BELKIN, Y a.G., kandidat tekhnicheskikh nauk; KARLINSKAYA, M.I.; MOROZ, V.A.; KAPLANSKIY, S.A., inzhener; MAGNICHKINA, V.P., inzhener; SIMYAGINA, M.N., inzhener; SOKOL'SKIY, I.P., redaktor; KONYASHINA, A., tekhnicheskiiy redaktor.

[Principal factors in dispatching and automation of city water supply systems] Osnovnye polozhenia po dispetcherizatsii i avtomatizatsii sistem gorodskogo vodosnabzhenia. Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1955. 38 p. (MLRA 9:1)

1. Akademiya kommunal'nogo khoziaistva.
(Water supply engineering)

SOV/112-57-6-12923

Translation from: Referativnyy zhurnal. Elektrotehnika, 1957, Nr 6, p 182 (USSR)

AUTHOR: Moroz, V. A.

TITLE: Remote-Control Systems for a Municipal Utility
(Ustroystva teleupravleniya ob'yektami kommunal'nogo khozyaystva)

PERIODICAL: V sb.: Telemekhaniz. v nar. kh-ve. M., AS USSR, 1956,
pp 223-228

ABSTRACT: A tabulated classification is presented of supervisory control systems intended for municipal utilities. A new multicommand supervisory control system (with a capacity of 6-60 commands) is described in which polar-pulse code with pulse-spacing selection is adopted. A new relay detent-type switch developed by IAT AN SSSR is used. A combined remote-control-tele-signaling key is used in the system. A few-command supervisory-control system is described which is capable of sending four commands on a polarity-amplitude DC basis. The line circuit of this system is presented. Methods of development of supervisory-control systems by means of the theory of relay circuits are described.

N.M.F.

Card 1/1

MOROZ, V.A., inzhener.

Rotary-pressure suction dredge ZGM-1. Mekh.trud.rab.10 no.7:23-26
Jl '56. (Dredging machinery) (MIRA 9:9)

Moroz, V. A.

10(4)
 AUTHOR: Rosin, J. I., Chairman
 TITLE: Conference on Scientific Research in the Field of Hydromechanics
 PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 7, pp 62-65 (USSR)
 Card 4/6
 Card 5/6
 ASSOCIATION: (Conference Organizing Committee) Organizat po
 provedeniya nauchnykh

21.7100

68587

21(1)

S/166/60/000/C1/007/C11

AUTHORS: Vasil'yev, V.P., and Moroz, V.D.

TITLE: The Investigation of the Vaporization Processes of the Oxide-Coated Cathode With the Aid of the Autoradiographic Method

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, Nr 1, pp 58-63 (USSR)

ABSTRACT: It is proposed to use the radioactive barium isotope Ba^{133} as an indicator for investigations of the vaporization processes of an oxide-coated cathode with the aid of the autoradiographic method. This isotope has β - and γ -radiation and its half-life is greater than 20 years. It is shown that with the aid of the autoradiography the distribution of the tagged matter on the surface of the investigated body can be found and that by photometric evaluation of the images it is possible to obtain not only qualitative but also quantitative data on the distribution of the activity on the electrodes. There are 5 figures, and 15 references, 10 of which are Soviet, 1 French, and 4 American.

ASSOCIATION: Sredneaziatskiy gosuniversitet imeni V.I. Lenina (Central Asiatic State University imeni V.I. Lenin)

SUBMITTED: December 18, 1959
Card 1/1

MOROZ, V.D.

Ash and coal fines. Sov.shakht. 10 no.5:15 My '61.

(MIRA 14:9)

1. Zamestitel' glavnogo inzhenera shakhty "Bokovo-Platovskaya"
tresta Krasnoluchugol'.

(Coal mines and mining)

MOROZ, V.D., gornyy inzh.; SAPITSKIY, K.F., dotsent, kand.tekhn.nauk

Experience in using the chamber method in mining Donets Basin
mines. Ugol' 37 no.5:24-27 My '62. (MIRA 15:6)

1. Donetskiy politekhnicheskii institut.
(Donets Basin--Coal mines and mining)

SIMONOV, Ya.P.; SALEPOVA, A.I.; SMIRNOVA, A.I.; SYRTSOVA, Ye.M.; MIKHAYLOVA, A.D.; YEFIMOVA, K.A.; MOROZ, V.F.; GUK, Yu.I.; NIKOLAYEVA, Z.A.; AYZENBERG, M.M.; MIKHAYLOVA, K.L.; ROGOVSKAYA, Ye.G., red.; VOLKOV, N.V., tekhn.red.

[Agroclimatic reference book on Nikolayev Province] Agroklima-
ticheskii spravochnik po Nikolaevskoi oblasti. Leningrad, Gidro-
meteor.izd-vo, 1959. 103 p. (MIRA 13:2)

1. Kiyev. Gidrometeorologicheskaya observatoriya. 2. Nachal'nik
otdela agrometeorologii Kiyevskey gidrometeorologicheskoy observa-
torii (for Salepova).
(Nikolayev Province--Crops and climate)

FEDOTOVA, R.D.; MOROZ, V.F.; PARUTA, V.T.; VEYLINSON, L.I.;
VOROB'YEV, A.A.; DEMCHENKO, I.I., red.; IVANCHUK, P.K.,
red.; RADUL, M.M., red.; SHARGORODSKIY, T.I., red.;
DMITRENKO, N.Z., red.; MANDEL'BAUM, M.Ye., tekhn. red.

[Some problems in developing the wall materials industry
in the Moldavian S.S.R. in 1959 - 1965] Nekotorye voprosy
razvitiia promyshlennosti stenovykh materialov v Moldavskoi
SSR v 1959 - 1965.gg. [By] R.D.Fedotova i dr. Kishinev,
Izd-vo "Shtiintsa" Moldavskogo filiala AN SSSR, 1960. 229 p.
(MIRA 17:2)

TREGUBOVA, A.S.[Trehubova, A. .]; MARCHEVA, Ye.T.; KISILENKO,
O.A.[Kysylenko, O.A.]; SMYRNOVA, A.I.[Smyrnova, A.I.];
MIKHAYLOVA, O.I.[Mykhalova, O.I.]; KARALENKO, A.I.;
KOROZ, V.P.; KUK, Yu.I.[Kuk, I. .]; AVDEYENKO, I.I.
MARKOV, V.I., red.

[Agroclimatic manual on Chiturs Province] Agroklimatychnyi
dovidnyk po Zhytomyrskii oblasti. Kyiv, Derzhstatizdat
Ukr., 1959. 89 p. (MIRA 17:6)

1. Ukraine. "Pravdivna informatsiia to chynny slushky.

MOROZ, V.G., inzh.; STARTSEVA, I.Ye.

Manufacturing cast fittings for high pressure pipelines.
Khim. mash. no. 4:45-47 JI-Ag '59. (MIRA 12:12)
(Pipe fittings)

MOROZ, V.G.:

High-latitude aerial expedition of 1960 for the establishment of
automatic radiometeorological drift stations. Probl.Arkt.i
Antarkt. no.7:57-58 '61. (MIRA 14:10)
(Arctic regions--Oceanographic research)

MOROZ, V.G., inzh.; STARTSEVA, I.Ye., inzh.; IVAKO, L.P., inzh.

Effect of heat treatment ~~on~~ the structure of 25L steel. Metalloved.
i term. obr. met. no.5:18-21 My '62. (MIRA 15:5)

1. Irkutskiy filial Gosudarstvennogo nauchno-issledovatel'skogo
i proyektnogo instituta neftyanogo mashinostroyeniya.
(Steel—Heat treatment) (Steel castings—Testing)

L 6898-65 EWT(m)/EPF(c)/EWP(q)/EWP(b) Pr-4 ASD(m)-3 MW/JD 52
ACCESSION NR: AR4044229 S/0137/64/000/006/1073/1073

SOURCE: Ref. zh. Metallurgiya, Abs. 61416

AUTHOR: Moroz, V. G.

TITLE: The influence of increased test pressures on the hydrogen stability of
steels 20, 25L, and 20KhGL 27

CITED SOURCE: Sb. Vliyaniye vodoroda na sluzhebn. svoystva stali. Irkutsk,
1963, 72-77

TOPIC TAGS: steel, test pressure, hydraulic pressure, embrittlement

TRANSLATION: There is investigated the influence of the preliminary action of a
hydraulic pressure of 600-1400 atm on the embrittlement of steel with prolonged
holding at 250°-300° in an atmosphere of H₂ under a pressure of 600 atm. Embrit-
tlement is determined from the results of tests, using rings cut from tubular sam-
ples, for flattening until the inner walls approach half the internal diameter. It was

Card 1/2

L 6898-65

ACCESSION NR: AR4044229

established. At a hydrotest under a pressure of 600-800 atm does not lead to embrittlement of samples of steel 20 and 25L during holding under pressure of H_2 for 1200-2030 hours at 250° and samples of steel 20KhGL at 300° . An increase of the pressure, during a hydrotest, to 100 atm and higher, and subsequent holding in H_2 under the same conditions, leads to the appearance of cracks on the inner surface of the annular samples during flattening. After a test pressure of 1400 atm (residual deformation 1%) there occurs almost total destruction of samples of steel 20, while in steel 25L the cracks become deeper. Steel 20KhGL at 250° possesses higher hydrogen stability than steels 20 and 25L. At 300° steel 20KhGL behaves just like steels 20 and 25L at 250° . More intense embrittlement of steel in H_2 with increased pressure during hydrotests is explained by plastic deformation occurring during the tests. Proof of this is the total recovery of hydrogen stability of steel after recrystallizational annealing, even in the case of very high test temperatures. Elastic deformation during proof tests does not worsen the hydrogen stability of steel.

SUB CODE: MM

ENCL: 00

Card 2/2